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CHRISTIAN COLLEGE,  
MARTANDAM, TAMIL NADU,  
January 9, 1978.

P. JAISINGH

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23. INSECTS VISITING LAC INSECT FOR HONEYDEW<sup>1</sup>

The lac insect, *Kerria lacca* (Kerr) excretes honeydew after settling at the suitable site on the shoots of the host plant species and a number of insects are attracted to it. The excretion often accumulates at the anal opening of the lac test, even ferments and attracts the sooty mould to grow thick enough to form a felt like covering over the lac insects killing them by suffocation. Honeydew is believed to be a waste product excreted into the Colo-rectum from the loops of the intestine that are suspended within the Colo-rectum (Kapur 1962). The frequency of excretion of the honeydew per insect per hour varies from 2.08 to 3.30 droplets by the larva and from 8.04 to 10.10 droplets by the fertilised females and it contains seventeen amino acids (Srivastava & Varshney 1966, 1968). A mature female excretes 0.2974 to 1.1716 cu. mm. honeydew per hour (Varshney 1972).

Mahdihassan (1925, 1939) reported several insects associated with lac but did not report any insects associated with honeydew, where-

as Negi *et al.* (1930) and Mahdihassan (1957) reported 17 insects, belonging to orders Hymenoptera and Diptera, associated with honeydew but without stating the crops and localities from where they were collected. Attempts were, therefore, made at Regional Field Research Station for lac, Damoh, Madhya Pradesh, to collect insects visiting honeydew during both the *rangeeni* crop seasons namely, *baisakhi* (October/November to June/July) and *katki* (June/July to October/November). A total of 48 insects collected by us, Negi *et al.* (1930) and Mahdihassan (1957), are being presented in table 1. The insects collected by these authors are shown by a + sign and those not collected by a — sign, and have been arranged under the orders and families.

It will be seen from the collections that hymenopterous and dipterous insects were the frequent visitors during both the crop seasons whereas lepidopterous insects were found only during *katki* and hemipterous insects only during *baisakhi* crop seasons. During *katki* crop season, *L. quadrispinous* and *M. brunnea* were found to build their formicaries round the sparse encrustation. Similarly, *D. koenigii* appeared during the time of male emergence during *baisakhi* crop season.

<sup>1</sup> This paper was read at the Seminar on Lac Production held at the Indian Lac Research Institute, Namkum, Ranchi on 9-10 November 1973 and refers to No. C-28 on p. 25 of the abstract.

MISCELLANEOUS NOTES

TABLE 1

INSECTS COLLECTED OF HONEYDEW BY VARIOUS AUTHORS

Species	Collected by the present authors		Negi <i>et al.</i> (1930)	Mahdihassan (1957)
	<i>baisakhi</i>	<i>katki</i>		
<b>Hymenoptera</b>				
FORMICIDAE				
1. <i>Camponotus angusticollis</i> Jerd.	+	+	-	-
2. <i>C. angusticollis</i> var. <i>sanguinolentus</i> For.	-	+	-	-
3. <i>C. compressus</i> Fabr.	-	-	+	-
4. <i>C. rufoglaucus</i> Jerd.	-	+	-	-
5. <i>C. sericeus</i> Fabr.	-	+	+	-
6. <i>C. variegatus</i> var. <i>fuscithorax</i> Forel.	-	-	+	-
7. <i>C.</i> near <i>varians</i> Roger	-	-	+	-
8. <i>Cremastogaster</i> sp.	+	+	-	-
9. <i>Dolichoderus</i> sp.	+	+	-	-
10. <i>Lophomyrmex quadrispinous</i> Jerd.	-	+	-	-
11. <i>Monomorium dichroum</i> For.	-	+	-	-
12. <i>M.</i> near <i>indicum</i> Smith	-	-	+	-
13. <i>M. latinoda</i> Mayr.	-	+	-	-
14. <i>Myrmicarica brunnea</i> Saund.	-	+	-	-
15. <i>Solenopsis geminata</i> subsp. <i>rufa</i> Jerd.	-	-	+	-
VESPIDAE				
16. <i>Polistes stigma</i> Fabr.	-	+	-	-
17. <i>Vespa orientalis</i> Fabr.	+	+	-	-
MUTILLIDAE				
18. <i>Mutilla</i> sp.	-	+	-	-
SPHEGIDAE				
19. <i>Sceliphron madraspatnam</i> Fabr.	+	-	-	-
APIDAE				
20. <i>Micrapis florea</i> Fabr.	+	-	-	-
CHALCIDIDAE				
21. <i>Brachymeria fulvitaris</i> Cam.	-	-	-	+
<b>Diptera</b>				
MUSCIDAE				
22. <i>Musca</i> sp.	+	+	-	-
23. <i>Musca ventrosa</i> Wied.	-	+	-	-
24. <i>M. pattoni</i> Aust.	-	+	-	-
25. <i>M. illingworthi</i> Patton.	-	+	-	-
26. <i>Gymnodia tonitrui</i> Wied.	-	-	-	+
27. <i>G. tonitrui</i> ab. <i>canache</i> Walk.	-	-	-	+

Species	Collected by the present authors		Negi <i>et al.</i> (1930)	Mahdihassan (1957)
	<i>baisakhi</i>	<i>katki</i>		
<b>CALLIPHORIDAE</b>				
28. <i>Chrysomya megacephala</i> Fab.	+	+	-	-
29. <i>C. rufifacies</i> Macq.	-	+	-	-
30. <i>C. albiceps</i> Wied.	-	-	-	+
<b>TABANIDAE</b>				
31. <i>Tabanus hilaris</i> Wlk.	-	+	-	-
32. <i>T. striatus</i> Fab.	-	+	-	-
33. <i>T. jucundus</i> Wlk.	-	+	-	-
<b>SARCOPHAGIDAE</b>				
34. <i>Sarcophaga</i> sp.	+	+	-	-
35. <i>S. hirtipes</i> Wied.	-	-	-	+
<b>TRYPETIDAE</b>				
36. <i>Tephrostola reinhardi</i> Wied.	-	-	-	+
<b>OTITIDAE</b>				
37. <i>Chrysomyza aenea</i> W.	-	-	-	+
38. <i>C. demandata</i> F.	-	-	-	+
<b>MILICHIIDAE</b>				
39. <i>Milichia pubescens</i> Beck.	-	-	-	+
40. <i>Milichiella lacetipennis</i> Loew.	-	-	-	+
<b>EPHYDRIDAE</b>				
41. <i>Gymnopa albipennis</i> Loew.	-	-	-	+
<b>Hemiptera</b>				
<b>PYRRHOCORIDAE</b>				
42. <i>Dysdercus koenigii</i> Fab.	+	-	-	-
<b>LYGAEIDAE</b>				
43. <i>Graptostethus servus</i> Fabr.	+	-	-	-
<b>Lepidoptera</b>				
<b>SATYRIDAE</b>				
44. <i>Mycalesis</i> sp.	-	+	-	-
45. <i>Mycalesis</i> sp. near <i>mineus</i>	-	+	-	-
<b>NYMPHALIDAE</b>				
46. <i>Neptis hylas varmona</i> Moore	-	+	-	-
47. <i>Precis iphita</i> Cramer	-	+	-	-
48. <i>Euthalia nais</i> Foster	-	+	-	-

## MISCELLANEOUS NOTES

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## 24. DRAGONFLIES

A couple of years ago in the month of October, I had been to Maniadih, a village near Dhanbad in Bihar. There was a Jheel at one end of the village where I passed some delightful time watching birds and insects that disported in and around the Jheel.

I found a good number of dragonflies (*Aeshna*?) flying at high speed over the water of the jheel. There were at least six different species, some of them red and some yellow. The biggest of them was about four inches long with its body banded with black and

white. It flew with a whirr which was quite audible when near. While watching them I suddenly found one such dragonfly flying with a big butterfly, possibly a crow (Danaid), judging by its big black wings flapping under the hold of the dragonfly. As the dragonfly sailed to and fro in the air, suddenly the wings of the butterfly drifted down to the water. The murderous dragonfly must have nipped them off. I could discern the wingless body of the victim held near the Jaws of the flying dragon.

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